Welcome to the Deep Sea

A brief introduction to past and present deep sea research

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Aristotle: "They enable the divers to respire equally well by letting down a cauldron, for this does not fill with water, but retains the air, for it is forced straight down into the water."

16th Century painting of Alexander the Great being lowered in a glass diving bell
Early Ideas for Submarines

Cornelius van Drebbel (a Dutch Inventor) was the first to actually build a submarine 1620.

At least 14 different submarine designs were patented by 1727.

The first known drawing of submarines were produced by da Vinci ~500 years ago.

It completed several journey’s on the Thames River at a depth of 12-15 feet.
John Lethbridges diving machine (1715)

The Turtle (1776) – first submarine used during a war

Photo: NOAA

L: Portrait of Ezra Lee, Turtle’s operator R: Cutaway replica at the Oceanographic Museum, Monaco. Photo Zenit CC BY-SA 3.0
1872 – 1876 First scientific expedition organized to gather data about a wide range of scientific features and processes (temperature, chemistry, water depths, currents, and marine life).
"At first when the dredge came up, every man and boy who could possibly slip away, crowded round it, to see what had been fished up."

- Professor Moseley in “Notes of a Naturalist” on the Challenger, p. 501.

362 sampling sites

Bathymetric Map of North Atlantic by Sir John Murray

Made the first systematic attempt to chart the basins of the world's oceans (492 bottom soundings)
The Bathysphere (1932)

William Beebee and Otis Barton

Drawing by Estelle Bostelmann (National Geographic) of two young viper fish as observed by Beebe and Barton from their bathysphere in the depths off Bermuda (1932).

©National Geographic Society; Illustration by E. Bostelmann.
Bathyscaphye Trieste (1960’s)

Don Walsh and Jacques Piccard dove to 10,915 in the Challenger Deep.
Alvin Submersible 1964 ... to present

Photo: WHOI
Human Occupied Vehicles

Shinkai – Japanese HOV

French HOV Nautilie

Alvin Submersible

Russian MIR II
Remotely Operated Vehicles

- ROV ROPOS
- ROV Hercules
- ROV Jason II
- ROV Victor
- ROV Doc Ricketts
- ROV Subastian
Autonomous Underwater Vehicles
Then

• Not open to all
  • Women not allowed onboard

• Samples and data not in a repository

• Not much metadata or global datasets

• Training was on the job

Now

• Largely open to all
  • Telepresence

• Samples and data are (suppose) to be available

• Big data sets
  • Machine Learning

• Training programs
The future of ocean exploration is **YOU**.

“We can only sense that in the deep and turbulent recesses of the sea are hidden mysteries far greater than any we have solved.”